

A 1
4(Amended). A process as claimed in claim 1, wherein the metal oxide which precipitates out of solution is a product of hydrolysis of the metal in its higher cationic oxidation state.

5(Amended). A process as claimed in claim 1, wherein the oxidant is added as an aqueous solution.

6(Amended). A process as claimed in claim 1, wherein the metal is selected from Ce or Fe.

623/21.1
7(Amended). A process as claimed in claim 1, wherein the aqueous solution of said metal in a lower cationic oxidation state comprises nitrate as a counter-ion.

8(Amended). A process as claimed in claim 1, wherein the aqueous solution of said metal in a lower cationic oxidation state is of a concentration in the range of from 0.01 to 1.0 mol/l.

9(Amended). A process as claimed in claim 1, wherein the aqueous solution of said metal in a lower cationic oxidation state is of a concentration of approximately 0.1 mol/l.

10(Amended). A process as claimed in claim 1, wherein the oxidant comprises hydrogen peroxide.

A2
12(Amended). A process as claimed in claim 10, wherein the metal in its lower oxidation state is Ce^{3+} , the metal in its higher oxidation state is Ce^{4+} and the metal oxide which precipitates has the general formula $\text{Ce}(\text{OH})_{4-y}\text{OOH}_y$ wherein $y \geq 1$.

15(Amended). A process as claimed in claim 1, comprising the further step of isolating the precipitate.

17(Amended). A process for the precipitation of a weakly agglomerated nanocrystalline powder of a metal oxide, which process comprises the steps of:

- (i) inducing homogeneous precipitation of said metal oxide by a process according to claim 13; and
- (ii) isolating the precipitate.

19(Amended). A process as claimed in claim 17 comprising the further step of washing and drying the precipitate.

20(Amended). A process as claimed in claim 17, wherein said hydrothermal treatment is at a temperature of from 100 to 300°C.

21(Amended). A process as claimed in claim 17, wherein said hydrothermal treatment is at a temperature of approximately 180°C.

22(Amended). A metal oxide obtained by a process as claimed in claim 1.

23(Amended). A weakly agglomerated nanocrystalline powder of a metal oxide produced according to a process as claimed in claim 17.

24(Amended). A metal oxide or a weakly agglomerated nanocrystalline powder of a metal oxide as claimed in claim 23 having a mean particle size in the range of from

2 to 10 nm with a geometric standard deviation in the particle size less than or equal to 1.2.

25(Amended). A metal oxide or a weakly agglomerated nanocrystalline powder of a metal oxide as claimed in claim 24 having a mean particle size in the range of from 2 to 5 nm with a geometric standard deviation in the particle size less than or equal to 1.1.

26(Amended). A metal oxide or a weakly agglomerated nanocrystalline powder of a metal oxide as claimed in claim 24 which comprises cerium oxide.

27(Amended). A glass, a polishing medium for glass, a thin surface film, a phosphor, an oxygen storage material or catalyst material which has been manufactured by a process which uses a weakly agglomerated nanocrystalline powder of a metal oxide as claimed in claim 23.
